

REMARKS

The Examiner has required an election of one article of manufacture from among those set forth in the claims. For search purposes only, applicants elect with traverse, the article of claim 72, i.e. an electric or electronic part. Claims readable on the elected invention are believed to be claims 1-20, 61-63, 65, 68, 70-72, 75 and 77.

Reconsideration and withdrawal of the requirement for restriction is respectfully requested in view of the following comments.

The present application is a national phase application filed in accordance with the provisions of 35 U.S.C. §371. As such, the claims of the application must comply with the requirements of PCT Rules 13.1 and 13.2 regarding unity of invention. Unity of invention exists when there is a technical relationship among the claimed inventions which involves one or more special technical features. A special technical feature is defined as a technical feature which defines a contribution which each of the inventions, considered as a whole, makes over the prior art. Note MPEP §1850.

The claims in this application are directed to cross-linkable rubber compositions and various articles of manufacture prepared therefrom. The compositions define one or more special technical features which are common to the articles manufactured therefrom. Since there is a technical relationship among the claimed inventions which involves one or more technical features, it is clear that unity of invention exists in the present application.

Accordingly, the restriction requirement should be withdrawn and claims 1-113 be given an examination on the merits. Such action is earnestly solicited.

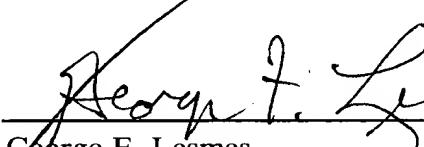
The Office Action also indicated that some claims are improper multiple dependent claims since they depend upon multiple dependent claims. Applicants have amended the claims and believe that there are currently no improper multiple dependent claims in the application.

From the foregoing, further and favorable action in the form of an action on the merits is believed to be next in order, and such action is earnestly solicited. If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned at (703) 838-6683 at his earliest convenience.

Respectfully submitted,

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Application No. 09/673,608
Attorney's Docket No. 000023-014
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Marked-up Claims

Please replace claims 5, 8, 10, 12, 13, 14, 15, 17, 18, 19, 20, 21, 23, 24, 25, 27, 29, 31, 32, 33, 34, 38, 40, 41, 42, 43, 46, 48, 51, 53, 56, 58, 59, 60, 61, 62, 63, 65, 66, 67, 68, 69, 70, 71, 72, 73, 75, 76, 77, 78, 79, 80, 83, 86, 87 and 94 as follows:

5. (Amended) The crosslinkable rubber composition as claimed in [any one of claims 2 to 4,] claim 2, wherein the ethylene/ α -olefin/non-conjugated polyene random copolymer rubber (A) has the following properties:

- (i) the molar ratio (ethylene/ α -olefin) of ethylene to an α -olefin of 3 to 20 carbon atoms is in the range of 40/60 to 95/5,
- (ii) the iodine value is in the range of 0.5 to 50, and
- (iii) the intrinsic viscosity (η) as measured in decalin at 135°C is in the range of 0.3 to 10 dl/g.

8. (Amended) The crosslinkable rubber composition as claimed in [any one of claims 2 to 7,] claim 2, wherein the ethylene/ α -olefin/non-conjugated polyene random copolymer rubber (A) is obtained by copolymerizing ethylene, an α -olefin and the norbornene compound represented by the formula (I) or (II) using a catalyst containing the following compounds (J) and (K) as main components under the conditions of a polymerization temperature of 30 to 60°C, a polymerization pressure of 4 to 12 kgf/cm² and a feed rate molar ratio (non-conjugated polyene/ethylene) of the non-conjugated polyene to ethylene ranging from 0.01 to 0.2;

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- (J) a soluble vanadium compound represented by $\text{VO}(\text{OR})_n\text{X}_{3-n}$ (R is a hydrocarbon group, X is a halogen atom, and n is 0 or an integer of 1 to 3), or a vanadium compound represented by VX_4 (X is a halogen atom);
- (K) an organoaluminum compound represented by $\text{R'}_m\text{AlX'}_{3-m}$ (R' is a hydrocarbon group, X' is a halogen atom, and m is an integer of 1 to 3).

10. (Amended) The crosslinkable rubber composition as claimed in claim 3 [or 4], wherein the catalyst (E) is a platinum catalyst.

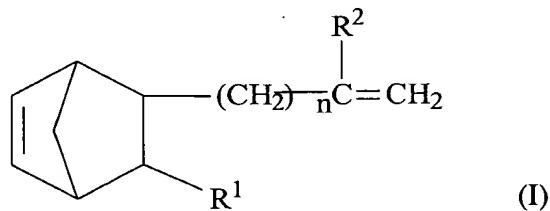
12. (Amended) The crosslinkable rubber composition as claimed in any one of claims 1 to [11,] 10, which has a crosslinking rate ($t_c(90)$) at 160°C of not more than 15 minutes.

13. (Amended) The crosslinkable rubber composition as claimed in any one of claims 1 to [12,] 10, which comprises an ethylene/ α -olefin/non-conjugated polyene random copolymer rubber (A1) having constituent units derived from at least one kind of a vinyl end group-containing norbornene compound represented by the following formula (I) or (II), said norbornene compound being the non-conjugated polyene, and constituent units derived from a non-conjugated polyene compound (2) containing a group represented by the following formula (III); and

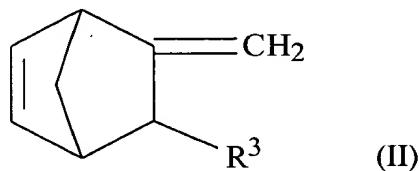
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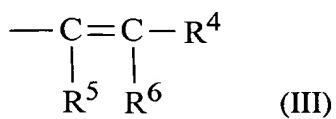
the SiH group-containing compound (B) having at least two SiH groups in one molecule:



wherein n is an integer of 0 to 10, R¹ is a hydrogen atom or an alkyl group of 1 to 10 carbon atoms, and R² is a hydrogen atom or an alkyl group of 1 to 5 carbon atoms;



wherein R³ is a hydrogen atom or an alkyl group of 1 to 10 carbon atoms;



wherein R⁴ is an alkyl group of 1 to 10 carbon atoms, and R⁵ and R⁶ are each independently a hydrogen atom or an alkyl group of 1 to 10 carbon atoms.

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14. (Amended) The crosslinkable rubber composition as claimed in any one of claims 2 to [13,] 10, wherein the ethylene/α-olefin/non-conjugated polyene random copolymer rubber (A) is the ethylene/α-olefin/non-conjugated polyene random copolymer rubber (A1) and has the following properties:

- (i) the molar ratio (ethylene/α-olefin) of ethylene to an α-olefin of 3 to 20 carbon atoms is in the range of 40/60 to 95/5,
- (ii) the iodine value is in the range of 0.5 to 50,
- (iii) the intrinsic viscosity (η) as measured in decalin at 135°C is in the range of 0.3 to 10 dl/g, and
- (iv) the branch index as measured by a kinematic viscoelasticity measuring machine is not less than 5.

15. (Amended) The crosslinkable rubber composition as claimed in any one of claims 2 to [13,] 10, which is a blend comprising the ethylene/α-olefin/non-conjugated polyene random copolymer rubber (A), a polyolefin resin (D1) and the SiH group-containing compound (B), is obtained by microdispersing the polyolefin resin (D1) in the ethylene/α-olefin/non-conjugated polyene random copolymer rubber (A) in a molten state, and has the following properties:

the average dispersed particle diameter of the polyolefin resin (D1) is not more than 2 μm , and

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the blending weight ratio ((D1)/(A)) of the polyolefin resin (D1) to the ethylene/ α -olefin/non-conjugated polyene random copolymer rubber (A) is in the range of 5/95 to 50/50.

17. (Amended) The crosslinkable rubber composition as claimed in any one of claims 2 to [12, 15 and 16,] 10, wherein the ethylene/ α -olefin/non-conjugated polyene random copolymer rubber (A) has the following properties:

- (i) the molar ratio (ethylene/ α -olefin) of ethylene to an α -olefin of 3 to 20 carbon atoms is in the range of 40/60 to 95/5,
- (ii) the iodine value is in the range of 0.5 to 50,
- (iii) the intrinsic viscosity (η) as measured in decalin at 135°C is in the range of 0.3 to 10 dl/g, and
- (iv) the branch index as measured by a kinematic viscoelasticity measuring machine is not less than 5.

18. (Amended) The crosslinkable rubber composition as claimed in any one of claims 2 to [13,] 10, which further comprises an alkenyl group-containing organopolysiloxane (C) in addition to the ethylene/ α -olefin/non-conjugated polyene random copolymer rubber (A) and the SiH group-containing compound (B).

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Marked-up Claims

19. (Amended) The crosslinkable rubber composition as claimed in any one of claims 2 to [12 and 18,] 10, wherein the ethylene/α-olefin/non-conjugated polyene random copolymer rubber (A) has the following properties:

- (i) the molar ratio (ethylene/α-olefin) of ethylene to an α-olefin of 3 to 20 carbon atoms is in the range of 40/60 to 95/5,
- (ii) the iodine value is in the range of 0.5 to 50,
- (iii) the intrinsic viscosity (η) as measured in decalin at 135°C is in the range of 0.3 to 10 d/g, and
- (iv) the branch index as measured by a kinematic viscoelasticity measuring machine is not less than 5,

20. (Amended) The crosslinkable rubber composition as claimed in any one of claims 2 to [12, 18 and 19,] 10, which is crosslinkable by hot air and has the following properties:

a hot-air crosslinked rubber sheet obtained by molding said rubber composition into a sheet and then subjecting the sheet to hot-air crosslinking has no scratch on the surface in a pencil hardness test using a pencil of HB and has a compression set (CS) of not more than 70 % after a heat treatment at 150°C for 22 hours and a tensile strength retention of 50 to 300 % after heat aging at 150°C for 72 hours.

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Marked-up Claims

21. (Amended) The crosslinkable rubber composition as claimed in any one of claims 1 to [12,] 10, which is used for producing an automobile weatherstrip.

23. (Amended) An automobile weatherstrip formed from the crosslinkable rubber composition of any one of claims 1 to [12.] 10.

24. (Amended) The crosslinkable rubber composition as claimed in any one of claims 1 to [12,] 10, which is a rubber composition for glass run that is crosslinkable by hot air and a hot press and which has the following properties:

a hot-press crosslinked rubber sheet obtained by molding said rubber composition into a sheet and then subjecting the sheet to hot-press crosslinking has a tensile strength of 5 to 16 MPa and a compression set (CS) of not more than 70 % after a heat treatment at 150°C for 22 hours.

25. (Amended) The crosslinkable rubber composition as claimed in any one of claims 2 to [12,] 10, which is a crosslinkable rubber composition for glass run and in which the ethylene/α-olefin/non-conjugated polyene random copolymer rubber (A) has the following properties:

(i) the molar ratio (ethylene/α-olefin) of ethylene to an α-olefin of 3 to 20 carbon atoms is in the range of 60/40 to 80/20,

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- (ii) the iodine value is in the range of 1 to 30,
- (iii) the intrinsic viscosity (η) as measured in decalin at 135°C is in the range of 1.5 to 3.5 dl/g, and
- (iv) the branch index as measured by a kinematic viscoelasticity measuring machine is not less than 5.

27. (Amended) The crosslinkable rubber composition as claimed in any one of claims 1 to [12,] 10, which is used for producing an automobile hose, a water supply hose or a gas hose.

29. (Amended) A hose formed from the crosslinkable rubber composition of any one of claims 1 to [12] 10.

31. (Amended) The crosslinkable rubber composition as claimed in any [oen] one of claims 1 to [12,] 10, which is a rubber composition for hose that is crosslinkable by hot air and a hot press and which has the following properties:

a hot-press crosslinked rubber sheet obtained by molding said rubber composition into a sheet and then subjecting the sheet to hot-press crosslinking has a volume resistivity (23°C) of 10^3 to 10^{16} $\Omega\cdot\text{cm}$, a tensile strength of 5 to 30 MPa and a compression set (CS) of not more than 70 % after a heat treatment at 150°C for 22 hours.

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32. (Amended) The crosslinkable rubber composition as claimed in any one of claims 2 to [12,] 10, which is a crosslinkable rubber composition for hose and in which the ethylene/α-olefin/non-conjugated polyene random copolymer rubber (A) has the following properties:

- (i) the molar ratio (ethylene/α-olefin) of ethylene to an α-olefin of 3 to 20 carbon atoms is in the range of 60/40 to 80/20,
- (ii) the iodine value is in the range of 1 to 30,
- (iii) the intrinsic viscosity (η) as measured in decalin at 135°C is in the range of 0.3 to 5.0 dl/g, and
- (iv) the branch index as measured by a kinematic viscoelasticity measuring machine is not less than 5.

33. (Amended) A hose comprising the rubber composition of claim 31 [or 32].

34. (Amended) The crosslinkable rubber composition as claimed in any one of claims 1 to [12,] 10, which is used for producing an automobile rubber vibration insulator, a railway rubber vibration insulator, an industrial equipment rubber vibration insulator or an earthquake proof rubber for construction.

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38. (Amended) A rubber vibration insulator comprising the crosslinkable rubber composition of any one of claims 1 to [12] 10.

40. (Amended) The crosslinkable rubber composition as claimed in any one of claims 1 to [12,] 10, which is a rubber composition for rubber vibration insulator that is crosslinkable by hot air and a hot press and which has the following properties:

a hot-press crosslinked rubber sheet obtained by molding said rubber composition into a sheet and then subjecting the sheet to hot-press crosslinking has a tensile strength of 5 to 16 MPa and a compression set (CS) of not more than 70 % after a heat treatment at 150°C for 22 hours.

41. (Amended) The crosslinkable rubber composition as claimed in any one of claims 2 to [12,] 10, which is a crosslinkable rubber composition for rubber vibration insulator and in which the ethylene/α-olefin/non-conjugated polyene random copolymer rubber (A) has the following properties:

- (i) the molar ratio (ethylene/α-olefin) of ethylene to an α-olefin of 3 to 20 carbon atoms is in the range of 60/40 to 80/20,
- (ii) the iodine value is in the range of 1 to 30,
- (iii) the intrinsic viscosity (η) as measured in decalin at 135°C is in the range of 1.5 to 3.5 dl/g, and

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(iv) the branch index as measured by a kinematic viscoelasticity measuring machine is not less than 5.

42. (Amended) A vibration insulating rubber product formed from the rubber composition of claim 40 [or 41].

43. (Amended) The crosslinkable rubber composition as claimed in any one of claims 1 to [12,] 10, which is used for producing a transmission belt or a conveyor belt.

46. (Amended) A belt formed from the crosslinkable rubber composition of any one of claims 1 to [12] 10.

48. (Amended) The crosslinkable rubber composition as claimed in any one of claims 1 to [12,] 10, which is used for producing an automobile cup/sealing material or an industrial equipment sealing material.

51. (Amended) A sealing material formed from the crosslinkable rubber composition of any one of claims 1 to [12] 10.

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53. (Amended) The crosslinkable rubber composition as claimed in any one of claims 1 to [12,] 10, which is used for producing an automobile weatherstrip sponge or another expanded product.

56. (Amended) An expanded product formed from the crosslinkable rubber composition of any one of claims 1 to [12] 10.

58. (Amended) The crosslinkable rubber composition as claimed in any one of claims 1 to [12,] 10, which is a rubber composition for weatherstrip sponge that is crosslinkable by hot air and which has the following properties:

a crosslinked rubber sheet obtained by molding said rubber composition into a sheet and then subjecting the sheet to hot-air crosslinking has a specific gravity of 0.1 to 0.8 and a water absorption of not more than 50 %.

59. (Amended) The crosslinkable rubber composition as claimed in any one of claims 2 to [12,] 10, which is a rubber composition for weatherstrip sponge and in which the ethylene/ α -olefin/non-conjugated polyene random copolymer rubber (A) has the following properties:

(i) the molar ratio (ethylene/ α -olefin) of ethylene to an α -olefin of 3 to 20 carbon atoms is in the range of 60/40 to 90/10,

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- (ii) the iodine value is in the range of 1 to 30,
- (iii) the intrinsic viscosity (η) as measured in decalin at 135°C is in the range of 0.3 to 5 dl/g, and
- (iv) the branch index as measured by a kinematic viscoelasticity measuring machine is not less than 3.

60. (Amended) A weatherstrip sponge formed from the crosslinkable rubber composition of any one of claims 1 to [12, 58 and 59] 10.

61. (Amended) The crosslinkable rubber composition as claimed in any one of claims 1 to [12,] 10, which is a rubber composition for highly expanded sponge that is crosslinkable by hot air and which has the following properties:

an expanded product of a crosslinked rubber sheet obtained by molding said rubber composition into a sheet and then subjecting the sheet to hot-air crosslinking has a specific gravity of 0.01 to 0.5, a water absorption of 1 to 500 % and an Asker C hardness of 0.1 to 50.

62. (Amended) The crosslinkable rubber composition as claimed in any one of claims 2 to [12,] 10, which is a crosslinkable rubber composition for highly expanded

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sponge and in which the ethylene/ α -olefin/non-conjugated polyene random copolymer rubber (A) has the following properties:

- (i) the molar ratio (ethylene/ α -olefin) of ethylene to an α -olefin of 3 to 20 carbon atoms is in the range of 60/40 to 90/10,
- (ii) the iodine value is in the range of 1 to 30,
- (iii) the intrinsic viscosity (η) as measured in decalin at 135°C is in the range of 0.3 to 4 dl/g, and
- (iv) the branch index as measured by a kinematic viscoelasticity measuring machine is not less than 5.

63. (Amended) A highly expanded sponge formed from the rubber composition of any one of claims 1 to [12, 61 and 62] 10.

65. (Amended) The crosslinkable rubber composition as claimed in any one of claims 1 to [12,] 10, which is used for producing a covered electric wire, an electric wire joint or an electric insulating part.

66. (Amended) A covered electric wire covered with a covering material comprising the crosslinkable rubber composition of any one of claims 1 to [12] 10.

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67. (Amended) An electric wire joint formed from the crosslinkable rubber composition of any one of claims 1 to [12] 10.

68. (Amended) An electric insulating part formed from the crosslinkable rubber composition of any one of claims 1 to [12] 10.

69. (Amended) A semi-conducting rubber part formed from the crosslinkable rubber composition of any one of claims 1 to [12] 10.

70. (Amended) The crosslinkable rubber composition as claimed in any one of claims 1 to [12,] 10, which is a rubber composition for electric or electronic part that is crosslinkable by hot air and a hot press and which has the following properties:

a hot-press crosslinked rubber sheet obtained by molding said rubber composition
into a sheet and then subjecting the sheet to hot-press crosslinking has a volume resistivity
(23 °C) of 10⁷ to 10¹⁷ Ω·cm, a tensile strength of 3 to 20 MPa and a compression set (CS)
of not more than 70 % after a heat treatment at 150 °C for 22 hours.

71. (Amended) The crosslinkable rubber composition as claimed in any one of claims 2 to [12,] 10, which is a crosslinkable rubber composition for electric or electronic

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part and in which the ethylene/ α -olefin/non-conjugated polyene random copolymer rubber

(A) has the following properties:

- (i) the molar ratio (ethylene/ α -olefin) of ethylene to an α -olefin of 3 to 20 carbon atoms is in the range of 60/40 to 90/10,
- (ii) the iodine value is in the range of 1 to 30,
- (iii) the intrinsic viscosity (η) as measured in decalin at 135°C is in the range of 0.3 to 2.5 dl/g, and
- (iv) the branch index as measured by a kinematic viscoelasticity measuring machine is not less than 5.

72. (Amended) An electric or electronic part formed from the crosslinkable rubber composition of any one of claims 1 to [12, 70 and 71] 10.

73. (Amended) the crosslinkable rubber composition as claimed in any one of claims 1 to [12,] 10, which is used for producing a household rubber product.

75. (Amended) The crosslinkable rubber composition as claimed in any one of claims 2 to [12,] 10, which can be crosslinked at ordinary temperature.

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76. (Amended) The crosslinkable rubber composition as claimed in any one of claims 2 to [12,] 10, which is used for reaction injection molding (RIM).

77. (Amended) The crosslinkable rubber composition as claimed in any one of claims 2 to [12,] 10, which is used for producing a thermoplastic elastomer.

78. (Amended) The crosslinkable rubber composition as claimed in any one of claims 2 to [12,] 10, which is used for modifying an engineering plastic.

79. (Amended) A household rubber product formed from the crosslinkable rubber composition of any one of claims 1 to [12] 10.

80. (Amended) The crosslinkable rubber composition as claimed in any one of claims 1 to [12,] 10, which is used for producing a sealing sponge for construction.

83. (Amended) The crosslinkable rubber composition as claimed in any one of claims 1 to [12,] 10, which is used for producing an OA machine roll or an industrial roll.

86. (Amended) An OA machine roll comprising the crosslinkable rubber composition of any one of claims 1 to [12] 10.

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87. (Amended) An industrial roll formed from the crosslinkable rubber composition of any one of claims 1 to [12] 10.

94. (Amended) A hydraulic cylinder part formed from the rubber composition of any one of claims 88 to [93] 92.